1 stepped pressure equilibrium code : mp01ab

1. Solves Beltrami linear system (for given helicity multiplier and poloidal flux), assuming sparse matrix, and returns interface rotational transform.

1.0.1 logical control

1. First, the matrix is assigned via a call to `ma01af` or `ma01ag`. This assigns the matrix quantities in `oMR` (and `dmR`), and `SCSF`, `irow` and `icol`.

2. if `Lsparse.eq.T` then will exploit the sparse structure of the matrix to reduce memory (and increase speed?). The routine `F11JEF` is used. Various parameters are given as input:

   - if `Lposdef=T` : use conjugate gradient, `method='CG'`
   - if `Lposdef=F` : use Lanczos method, `method='SYMMLQ'`
   - if `sparsepc=0` : no preconditionder, `precon='N'` (works terribly);
   - if `sparsepc=1` : Jacobi preconditionder, `precon='J'`
   - if `sparsepc=2` : SSOR preconditionder, `precon='S'`

   Other parameters, `sparsetol`,`sparseits` and `ssoromega`, are provided on input. The accuracy of the solution is controlled by `sparsetol`. (See the NAG documentation for details.) Note that if `sparseits.le.0`, then `sparseits=N` where `N` is the size of the matrix. Note that if `sparsetol.le.0.0`, then `tol=`ϵ where ϵ is machine precision. The initial guess for the iterative calculation is taken to be the last calculation solution. The sparse iterative approach needs more work to verify the speed, robustness and accuracy.

3. The sparse representation of the matrix, as determined by `ma01aa`, may contain repeated entries. These must be summed (by `F11ZBF`).

mp01ab.h last modified on 2012-03-18 ;